

# Mineral Industry Surveys

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## MANUFACTURED ABRASIVES IN THE FOURTH QUARTER 2005

The U.S. Geological Survey (USGS) collects quarterly data on manufactured abrasives through its survey of producers. Manufactured abrasives included in this report are fused aluminum oxide, silicon carbide, and metallic abrasives. Where indicated, Canadian and United States data are combined to protect proprietary information. Except where noted, the quantities cited in this report are in metric units. All unit value calculations in this report are based on unrounded data.

### Fused Aluminum Oxide

The total production during the fourth quarter of 2005 was estimated to be 5,000 metric tons of regular-grade crude fused aluminum oxide with an estimated value of \$1.5 million. Only one company, which operates one plant in Canada, produced fused aluminum oxide. This total production figure has been rounded to the nearest 5,000 tons to avoid disclosing proprietary data.

According to the U.S. Census Bureau, U.S. imports of crude fused aluminum oxide for 2005 through the month of November were 194,000 tons valued at \$60.9 million, or an average of \$313 per ton. About 85% of the imports came from China, 11% from Venezuela, 4% from Canada, and less than 1% from other countries. Imports of crude fused aluminum oxide from China may not all be abrasive-quality material.

There were no reported U.S. imports of refined and ground fused aluminum oxide for 2005 through the month of November.

U.S. exports of fused aluminum oxide for 2005 through the month of November were 13,200 tons. The exports were valued at \$42.0 million, or \$3,200 per ton. Germany received 33% of the exports that were shipped; Canada 23%, Mexico 16%, Japan 12%, Republic of Korea 4%, and others 12%.

The Department of Defense stores fused aluminum oxide in the National Defense Stockpile (NDS), but all of the NDS aluminum oxide has been authorized by law for disposal. During the fourth quarter of 2005, the Department of Defense held no sales of fused aluminum oxide abrasive grain. NDS reported that 6,221 tons of fused aluminum oxide abrasive grain with an estimated value of \$2.2 million remained in the stockpile. The NDS has sold all of the crude fused aluminum

oxide in the stockpile (Janet Rollins, Defense National Stockpile Center, oral commun., February 21, 2006). No further stockpiling of crude fused aluminum oxide by the Department of Defense is anticipated. If the current authorized disposal rate and NDS sales schedules are continued, all of the stockpiled fused aluminum oxide abrasive grain could be sold by the end of 2006.

### Silicon Carbide

Abrasive-grade silicon carbide is produced by one company in the United States. The total production during the fourth quarter of 2005 was estimated to be 10,000 tons of abrasive-grade silicon carbide with an estimated value of \$4.9 million. This total production figure has been rounded to the nearest 5,000 tons to avoid disclosing proprietary data.

Total U.S. imports of crude silicon carbide for 2005 through the month of November were 131,000 tons valued at \$62.7 million; imports from China alone were 94,000 tons valued at \$48.7 million. The average price of imported crude silicon carbide, excluding Chinese crude, was \$382 per ton; the average price of Chinese crude was \$517 per ton. U.S. imports of refined and ground silicon carbide for the same period were 43,000 tons valued at \$49.9 million, or an average of \$1,162 per ton. During the period, China accounted for 72% of the crude material and 29% of the refined and ground material.

U.S. exports of crude silicon carbide for 2005 through the month of November were reported to be 5,790 tons with a value of \$7.82 million. Exports of refined and ground silicon carbide were 7,920 tons valued at \$7.73 million. About 94% of the crude material was shipped to, in decreasing order, Norway, Mexico, Finland, and Japan. About 94% of the refined material went to, in decreasing order, Canada, Norway, Mexico, and Japan.

The NDS has sold all of the silicon carbide in the stockpile. No further stockpiling is anticipated.

### Metallic Abrasives

Metallic abrasives information was collected from 12 companies operating 13 U.S. plants. During the fourth quarter of 2005, four companies produced 50,300 tons of steel shot and

grit, an increase of 8%, compared with the same period in 2004. At least one of the companies produced shot and grit from reclaimed material. Total fourth quarter production was valued at \$22.9 million, or an average of \$455 per ton. Total annual production in 2005 was 207,000 tons valued at \$94.4 million; 2004 production was 193,000 tons valued at \$87.8 million; 2003 production was 192,000 tons valued at \$86.2 million; 2002 production was 201,000 tons valued at \$91 million.

Shipments of steel shot and grit in the fourth quarter of 2005 were 55,200 tons valued at \$26.6 million, or an average of \$482 per ton, compared with shipments during the fourth quarter of 2004, which were 45,900 tons valued at \$21.1 million for an average of \$458 per ton.

During the fourth quarter seven companies produced 517 tons other types of metallic shot and grit (primarily cut wire shot) valued at \$1.64 million.

Imports of all types of metallic shot and grit for 2005 through the month of November were 15,100 tons valued at \$11.5 million for an average of \$761 per ton. Canada was the largest supplier, accounting for 63% of the tonnage imported.

Exports of all types of metallic abrasives for 2005 through the month of November were 25,500 tons valued at \$20.3 million, or an average of \$795 per ton. Shipments to Mexico accounted for 43% of the exports; an additional 41% was shipped to Canada.

TABLE 1  
MANUFACTURED ABRASIVES<sup>1</sup>

(Metric tons, unless otherwise specified)

Source and product	2004		2005							
	Fourth quarter		First quarter		Second quarter		Third quarter		Fourth quarter	
	Value		Value		Value		Value		Value	
	Quantity	(thousands)	Quantity	(thousands)	Quantity	(thousands)	Quantity	(thousands)	Quantity	(thousands)
United States and Canada, production: <sup>2</sup>										
Silicon carbide <sup>3</sup>	10,000	\$4,900	10,000	\$4,900	10,000	\$4,900	10,000	\$4,900	10,000	\$4,900
Crude aluminum oxide, regular-grade	5,000	1,500	5,000	1,500	5,000	1,500	5,000	1,500	5,000	1,500
United States, production:										
Steel shot and grit	46,600	21,300	53,100	24,300	51,000	23,400	52,500	23,800	50,300	22,900
Other shot and grit <sup>e, 4</sup>	297	1,070	451	1,460	609	2,230	539	1,830	517	1,640
Total	46,900	22,300	53,500	25,700	51,600	25,600	53,100	25,600	50,800	24,500
United States, shipments:										
Steel shot and grit	45,900	21,100	56,400	27,400	55,600	26,900	57,000	27,300	55,200	26,600
Other shot and grit <sup>e, 4</sup>	273	950	480	1,720	583	2,090	523	1,870	559	1,910
Total	46,200	22,000	56,900	29,200	56,200	29,000	57,500	29,200	55,800	28,500

<sup>e</sup>Estimated.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Quantities are rounded to the nearest 5,000 tons to avoid disclosing proprietary data; values are estimated.

<sup>3</sup>Includes materials for metallurgical uses and other applications.

<sup>4</sup>Includes cut wire shot and reclaimed shot and grit from primary producers.